Redstone Arsenal Electric Peak Demand Reduction

Title: Electric Peak Demand Reduction Phase I
Installation: Redstone Arsenal, AL
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Mission Benefits: This project reduces the cost of power on Redstone Arsenal by providing an alternative power source during peak demand periods. Currently, the Tennessee Valley Authority (TVA) charges Redstone Arsenal $13.50/KW demand costs in addition to the consumption charge based on the monthly peak on a per month basis.

Cost Benefits: The expected cost savings associated with this project is $360K/year. This is based on the $13.50/KW multiplied by the 3.1MW plant capacity less the cost of natural gas and maintenance.

Environmental Benefits: High efficiency oxidation catalyst were installed on the system in accordance with 40 CFR 63 Subpart ZZZZ, National Emission Standards Hazardous Air Pollutants for Reciprocating Internal Combustion Engines, to insure that EPA standards for air emissions are met. These catalysts exceed the requirement of reducing CO by 93% and formaldehyde concentrations below 14 ppm.

Description: This project is at Primary Substation #3 off of Patton Road. This project includes (4) 770 KW Caterpillar G3516 natural gas generators, existing refurbished transformers, switchgear, control system, interface with the existing SCADA system, and natural gas supply for the generators.

Costs: The programmed amount was $3.1M. The demand savings will be $13.5/KW multiplied by 3,100 KW which is $41,850/month or $502,200/year. The cost of operation is estimated at $120,000/year and maintenance cost at $18,500/year. The first year dollar savings is $360,000, the savings to investment ratio is 1.75, and the simple payback is 8 years.

Regulatory Drivers (if any):
Alabama Department of Environmental Management (ADEM) Administrative Code 335-3-14
40 CFR 63 Subpart ZZZZ – National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
ADEM Administrative Code 335-3-4
ADEM Administrative Code 335-3-5

Lessons Learned:

1. Submit appropriate construction air permit applications early so construction can begin on schedule, and so temporary authorization to operate can be obtained quickly after construction is complete.
2. Be aware of changing regulations that could place more stringent emission requirements on new or reconstructed sources.
3. Review all applicable environmental regulations during the design phase to determine if emission control devices will be required.
4. Include costs for environmental permitting and emission control devices in initial project budgets.

Points of Contact:
Installation POC, Environment: Michael Wassell, 256-876-8607
Installation POC, Process Owner:
Vendor POC:
Website(s) for more info: